

REMARKS

By this amendment claims 1-23 have been deleted and replaced by claims 24-46, which are all the claims pending in the application.

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1-23 are rejected under 35 U.S.C. § 102(e) as being anticipated by Garces (US Patent 6,018,225).

The Applicants traverse the rejections and request reconsideration.

2. Section 112 rejections

The new claims are believed to be bereft of the alleged section 112 problems noted in the presently cancelled claims.

3. Rejections based on prior art

Claims 1-23 have been rejected as being anticipated by Garces. A feature of the present invention is the measurement of the phase and amplitude of the residual voltage. This residual voltage measurement is then used in further operations to control the motor. However, the Examiner is incorrectly construing back EMF to be similar to residual voltage.

Residual voltage is clearly defined in page 20 to be the voltage in the AC motor when the current is zero. On the other hand, back EMF is defined as the voltage generated that opposes the voltage of the motor.

"Residual voltage" is the voltage that is generated by rotation of the residual magnetism. On the other hand, the back EMF is an induced voltage given by the field current. In other words, the residual voltage can be observed without providing the field current, whereas, the

back EMF requires the field current for its generation. The cited reference Garces intentionally provides the field current under the free run condition to achieve such a back EMF.

Further, Garces reference does not disclose (or even remotely suggest) measuring the phase and amplitude of the residual voltage. Garces discloses techniques for “catching” a motor, that is reconnecting a motor drive to a motor after a power failure. The only quantities that are determined by Garces are the speed and direction of rotation, in order to assist in “catching” the motor. This is significantly different from measuring a phase and amplitude of the residual voltage. While in passages 535-66 Garces may be teaching that the currents in the q-d coordinate systems are set to zero, this is done to detect the presence of a back EMF and not for determining the phase and amplitude of a residual voltage as in the present invention.

The present invention requires detecting phase and amplitude of a residual voltage. A skilled artisan would know that if an attempt is made to start an electric power converter merely based on the detected frequency and direction of rotation of the residual voltage (as in Garces), without detecting the phase and amplitude thereof (as in the present invention), a large current is likely to flow into the electric power converter, possibly tripping the converter. In this regard, it is important to detect the phase and amplitude of the residual voltage aiming for coinciding or matching these factors with those of the electric power converter (as in the present invention) at least to avoid the tripping of the converter.

Claims 25, 27-31 and 33-46 are dependant on claims 24, 26 and 32 and therefore patentable for the same reasons.

Further, regarding claim 39, there is no teaching in Garces related to supplying an arbitrary DC current to the motor when it is in the free run condition prior to detecting a frequency of the current signal.

CONCLUSION

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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